

ABSTRACT OF THE DISCLOSURE

A rare earth ion ultrashort laser source includes a resonant cavity having a first output face partially reflecting and a second reflecting face. The source also includes a first active material, which receives a pump luminous flux transmitted via a first solid laser pump source. The resonant cavity exhibits a length of optical path travelled by the pulses greater than 7.5 m so that the pulsed energy E_L is greater than 100 nJ, the optical path including at least one passage in the active material and the ultrashort laser source includes elements for lengthening the resonant cavity thereby enabling to extend the length of the optical path travelled by the luminous pulses in the resonant cavity, the ABCD propagation matrix of the resonant cavity being close to the unit matrix so that the features of the luminous beam going back and forth in the resonant cavity remain unchanged.